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**UNITED STATES
AIR FORCE**



OCCUPATIONAL SURVEY REPORT

TELEPHONE SWITCHING

AFSC 362X1
(PROJECTED 2E7X1)

AFPT 90-362-952

OCTOBER 1993

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**OCCUPATIONAL ANALYSIS PROGRAM
USAF OCCUPATIONAL MEASUREMENT SQUADRON
AIR EDUCATION and TRAINING COMMAND
1550 5th STREET EAST
RANDOLPH AFB, TEXAS 78150-4449**

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Standards Branch (MAGTEC)	1			
USAFOMS/OMDQ	1			
USAFOMS/OMYXL	10		5	10
USMC	1		1	1
7 CG/LGQQ (1600 AF PENTAGON WASHINGTON DC 20330-1600	1		1	1
81 TTG/CCVT	1			
361 TTS/TTOK (511 9TH AVENUE STE 1 SHEPPARD AFB TX 76311-2338)	11	2	8	7
396 TTG/TTS (620 9TH STREET STE 1 SHEPPARD AFB TX 76311-2338)	1			1

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PREFACE

This report presents the results of an occupational survey of the Telephone Switching career ladder, AFSC 362X1 (soon to be AFSC 2E7X1). Authority for conducting occupational surveys is found in AFR 35-2. Computer products used in this report are available for use by operations and training officials.

Captain R. H. Babin, Occupational Analyst, developed the survey instrument. Second Lieutenant Sheon H. Mendoza analyzed the data and wrote the final report. Ms Rebecca Hernandez provided computer programming support, and Ms Raquel A. Soliz provided administrative support. This report has been reviewed and approved for release by Major Randall C. Agee, Chief, Airman Analysis Section, Occupational Analysis Flight, USAF Occupational Measurement Squadron.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies may be requested from the USAF Occupational Measurement Squadron, Attention: Chief, Occupational Analysis Flight (OMY), 1550 5th Street East, Randolph AFB, Texas 78150-4449.

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SUMMARY OF RESULTS

1. Survey Coverage: The survey results are based on the responses of 447 military personnel assigned to the AFSC 362X1 (2E7X1) career ladder. This sample represents 63 percent of the total assigned strength.
2. Career Ladder Structure: Five jobs and four clusters were identified. Nearly half the sample fell within the main cluster--Digital Switching Systems Maintenance. Other jobs within the career ladder differed in the amount of time spent on administrative, supervisory, and commercial coordination tasks.
3. Career Ladder Progression: AFSC 362X1 personnel progress typically through the career ladder. At the 3- and 5-skill level, the incumbents perform a highly technical job, centered around maintenance, troubleshooting, and repair tasks. Seven-skill level personnel perform more administrative and supervisory tasks, as well as inspection and quality control tasks. Specialty descriptions provide an accurate overview of the tasks involved with each of the skill levels.
4. Training Analysis: A match of the survey data to the AFSC 362X1 Specialty Training Standard (STS), identified 57 paragraphs not supported by the OSR data. Many of these unsupported paragraphs were related to electromechanical switching systems maintenance. Revisions of the STS are scheduled for February 1994.
5. Job Satisfaction Analysis: The job interest and perceived utilization of talents for AFSC 362X1 career ladder personnel were higher than that of other mission equipment maintenance personnel surveyed in 1992. The perceived utilization of talents for AFSC 362X1 personnel was lower than that of the comparative sample. This difference may be the result of the change in technology. A notable difference was identified in the sense of accomplishment for AFSC 362X1 personnel working within the nontechnical jobs within the job structure. There was also a notable difference in the job interest of personnel working within the most commonly held jobs within the career field and that of the other smaller jobs.
6. Implications: There were vast changes in the job structure between this survey and the last, due to the changes in technology and the contracting out of engineering and installation duties. The analysis of the STS revealed that the upcoming revisions to the document are warranted.

**OCCUPATIONAL SURVEY REPORT (OSR)
TELEPHONE SWITCHING CAREER LADDER
AFSC 362X1
(Projected to be AFSC 2E7X1 after 31 October 93)**

INTRODUCTION

This occupational survey was requested by the 3750th Technical Training Wing, Sheppard Training Center, to review the structure of the career ladder based on the inclusion of digital switching in the basic J3ABR36231 course and the elimination of electromechanical switching from the course. The last survey pertaining to this career ladder was published March 1990.

Background

According to AFR 39-1 Specialty Descriptions, personnel in this career field are responsible for installing, removing, refurbishing, maintaining, testing, and troubleshooting telephone switching systems, T-carriers, fiber optic modems, and multiplexers and associated equipment supporting systems for command, control, communications, and computers (SC4).

In addition, the 7-skill level personnel are responsible for directing project and maintenance actions of telephone switching systems, T-carrier, fiber optic modems, and multiplexers and associated equipment supporting systems for command, control, communications, and computers.

Upon completion of basic training, AFSC 362X1 personnel complete the J3ABR36231 003 course taught at Sheppard AFB TX. The course is 61 days long and covers the fundamentals of digital switching.

SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory (JI) AFPT 90-305-931, dated July 1992. A tentative task list was created using pertinent career ladder regulations, publications, and directives. Tasks were also taken from the previous JI.

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This tentative task list was then reviewed, refined, and validated through personal interviews with 46 subject-matter experts (SMEs). These SMEs were selected to cover a variety of major commands (MAJCOMs) and telephone switching functions at the following locations:

<u>BASE</u>	<u>REASON FOR VISIT</u>
Sheppard AFB TX	Technical School
Griffiss AFB NY	Location of the only SYS 85 equipment (AT&T)
Kelly AFB TX	Uses the DMS100 switch with large trunk capacity
Keesler AFB MS	Uses MSL100 switch (NTI), maintains an Engineering and Installation (E & I) office
Eglin AFB FL	Extensive use of fiber optic equipment
Kirtland AFB NM	Uses an electromechanical SXS switch

These locations were identified by the Air Force Functional Manager and the MAJCOM Functional Managers to provide input from digital telephone switches currently in use and to include E & I tasking and functions.

The final survey contained a comprehensive listing of 465 tasks grouped under 16 duty headings, with a background section requesting information such as grade, job title, time in present job, time in service, job satisfaction, and equipment maintained.

Survey Administration

From June through October 1991, Military Personnel Flights at operational bases worldwide administered the inventory to all eligible AFSC 362X1 personnel. All AFSC 362X1 personnel were considered eligible, unless they were of one of the following categories: (1) hospitalized during administration period; (2) in transition for a permanent change of station; (3) personnel retiring during administration period; or (4) personnel in their job for less than 6 weeks. Participants were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Human Resources Directorate at the Armstrong Laboratory.

Each individual completing an inventory was required to complete an identification and biographical information section. They were also required to check each task on the inventory they performed in their current job. Once they had identified the tasks they performed, they were instructed to go back through the inventory and rate each of the tasks they perform on a 9-point scale, showing the relative time spent performing that task as compared to other tasks they performed. These ratings ranged from very small to very large amount of time spent.

Using the ratings provided by the respondents, relative time spent for each task was computed, summing all the ratings given by the respondent and assuming this sum represented the respondents' total time spent. Each rating was then divided by this sum and multiplied by 100 to get a relative percent time spent rating for each task.

Survey Sample

The sample used for this study was examined to ensure an accurate representation across MAJCOMs and paygrades. Table 1 reflects the percentage distribution, by MAJCOM, of the assigned and sample AFSC 362X1 personnel as of June 1993. The 447 respondents in the final sample represent 63 percent of the eligible population of AFSC 362X1 personnel. Table 2 reflects the paygrade distribution of both the sample and the population.

Task Factor Administration

Because job descriptions alone will not provide sufficient data to make decisions about career ladder documents or training programs, task factor information is needed. Senior AFSC 362X1 personnel (generally E-6 or E-7 technicians) completed a second task factor booklet for either training emphasis (TE) or task difficulty (TD). These TE and TD booklets are processed independently from the JIs. The information obtained from these booklets is used in a variety of analyses discussed in more detail throughout the report.

Task Difficulty (TD). TD is defined as an estimate of the length of time it takes the average airman to learn to do the task. For this survey, 34 experienced NCOs rated the difficulty of the inventory tasks on a 9-point scale ranging from 1 (easy to learn) to 9 (difficult to learn). The interrater agreement among these raters was acceptable. TD ratings are adjusted to ensure that tasks have an average value of 5.0, with a standard deviation of 1.0. Thus, any task having a difficulty level of 6.0 or higher is considered difficult to learn.

Training Emphasis (TE). TE is defined as a rating of which tasks require emphasis in structured training for first-enlistment personnel. Structured training is any training given through any organized method. This includes, but is not limited to, training provided in resident training schools, field training detachments (FTD), mobile training teams (MTT), and formal on-the-job training (OJT). Forty-five experienced NCOs rated the tasks in the inventory on a 10-point scale ranging from 0 (no training required) to 9 (extremely high amount of training required). The

interrater agreement for the TE ratings was also acceptable. The average TE rating was 2.80, with a standard deviation of 1.53. Any task rated 4 or higher was considered to have a high TE.

Using TD, TE, and percent members performing data, insight into first-enlistment personnel training requirements can be obtained. Such insights may suggest the need for lengthening, shortening, inclusion, or deletion of tasks from formal training or instruction.

CAREER LADDER STRUCTURE

The first step in the occupational analysis process is to identify the structure of the career ladder in terms of the jobs performed by the respondents. Comprehensive Occupational Data Analysis Programs (CODAP) assists by creating an individual job description for each respondent based on the tasks performed and relative amount of time spent on the tasks. The CODAP automated job clustering program then compares all the individual job descriptions, locates the two descriptions with the most similar tasks and time spent ratings, and combines them to form a composite job description. In successive stages, new members are added to this initial group, or new groups are formed based on the similarity of tasks and time spent ratings.

The basic group used in the hierarchical clustering process is the Job. When two or more jobs have a substantial degree of similarity in tasks performed and time spent on tasks, they are grouped together and identified as a Cluster. The structure of a career ladder is defined in terms of jobs and clusters of jobs.

Overview of Specialty Jobs

Based on the similarity of JI responses, five jobs and four clusters were identified. Forty-seven percent of the respondents perform the work represented by the Digital Switching Systems Maintenance cluster. Within the cluster, two jobs were identified. The remaining jobs identified in the structure analysis represent support and management functions.

Figure 1 illustrates the division of jobs within the Telephone Switching career ladder. Table 3 presents the relative time spent on duties by respondents within the identified career ladder jobs.

The stage (ST) or group (GP) numbers shown beside the title are reference numbers assigned to the group by the CODAP program. The symbol "N" denotes the number of respondents performing the job. Table 4 lists selected background data for the groups.

TABLE 1
AFSC 362X1 MAJCOM DISTRIBUTION

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
USAFE	17	20
AETC	11	12
PACAF	13	12
AFIC	1	-
AMC	9	10
AFMC	14	7
AFSPACECOM	6	7
AFC4A	9	9
ACC	14	15
7 THCG	3	4
EUROPE	2	2
OTHER	1	1

Total Assigned as of April 1992.: 799

Total Eligible for Survey: 711

Total in Sample: 447

Percent of Eligible in Sample: 63%

Percent of Assigned in Sample: 55%

- Denotes less than 1 percent

TABLE 2
PAYGRADE DISTRIBUTION OF AFSC 362X1

<u>PAYGRADE</u>	<u>PERCENT OF ASSIGNED*</u>	<u>PERCENT OF SAMPLE</u>
E-2	2	3
E-3	11	9
E-4	31	32
E-5	29	26
E-6	15	17
E-7	11	13
E-8	1	-

* As of April 1992

- Denotes less than 1 percent

AFSC 362X1 JOB STRUCTURE

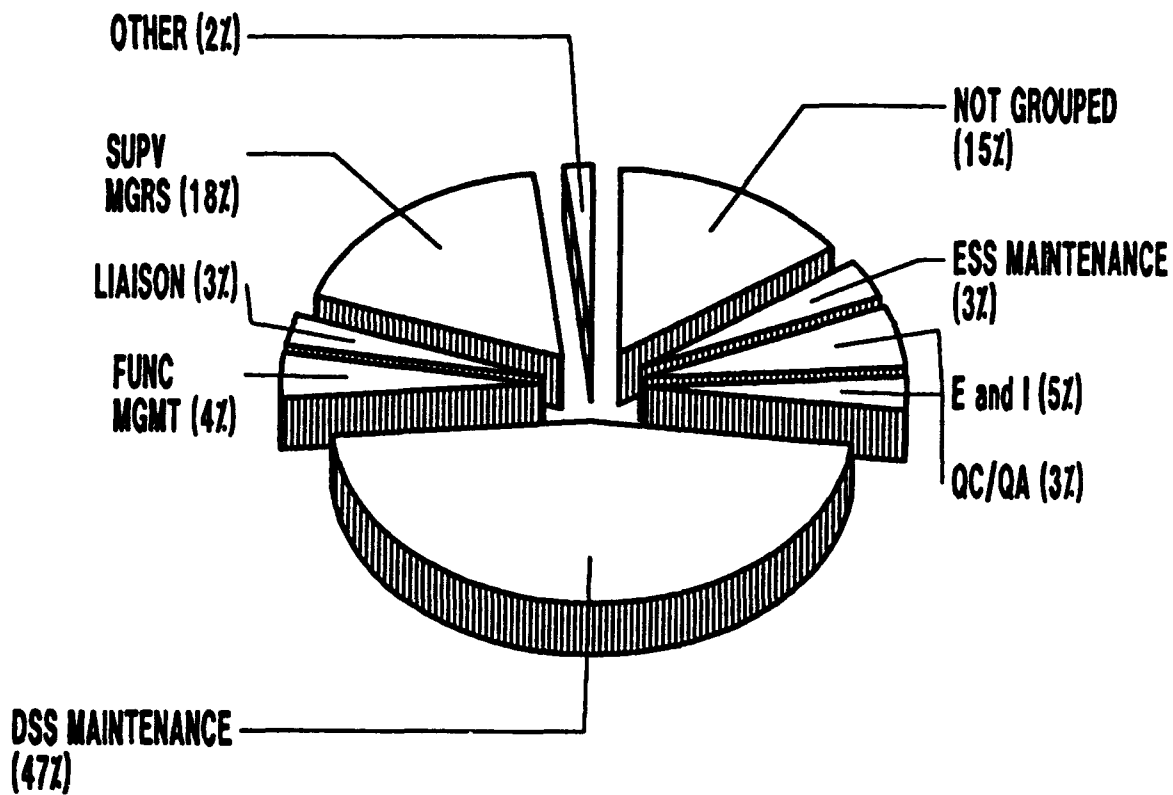


FIGURE 1

TABLE 3

DISTRIBUTION OF DUTY TIME SPENT BY MEMBERS OF CAREER LADDER
(RELATIVE PERCENT OF JOB TIME)

<u>DUTIES</u>	<u>DSS</u>		<u>ESS</u>		<u>E&I</u>		<u>JOB</u>	
	<u>MAINT</u>	<u>TEAM</u>	<u>MAINT</u>	<u>TEAM</u>	<u>MAINT</u>	<u>TEAM</u>	<u>CNTRL</u>	<u>CNTRL</u>
A ORGANIZING AND PLANNING	6	4	6	4	4	4	32	32
B DIRECTING AND IMPLEMENTING	3	2	4	2	2	2	5	5
C INSPECTING AND EVALUATING	3	3	4	3	3	3	-	-
D TRAINING	4	2	4	2	2	2	4	4
E PERFORMING ADMINISTRATIVE OR SUPPLY TASKS	7	8	8	8	8	8	13	13
F PERFORMING DIAL SERVICES ADMINISTRATOR TASKS	4	-	-	-	-	-	-	-
G PERFORMING JOB CONTROL TASKS	6	4	4	4	-	-	38	38
H MAINTAINING SPECIAL CIRCUITS AND ANTICILLARY EQUIPMENT ON DIGITAL SWITCHED SYSTEMS	17	4	4	2	2	2	-	-
I PERFORMING CUSTOMER SERVICE TASKS	12	7	7	3	3	3	-	-
J MAINTAINING DIGITAL SWITCHING CENTRAL CONTROL SYSTEMS	4	-	-	-	-	-	-	-
K MAINTAINING DIGITAL SWITCHING NETWORKS	2	-	-	-	-	-	-	-
L MAINTAINING DIGITAL LINE AND TRUNK INTERFACE EQUIPMENT	8	-	-	-	-	-	-	-
M MAINTAINING DIGITAL SWITCHING INPUT/OUTPUT EQUIPMENT	6	1	1	-	-	-	-	-
N PERFORMING ENGINEERING AND INSTALLATION TASKS	3	1	1	57	57	57	-	-
O MAINTAINING ELECTROMECHANICAL TELEPHONE SWITCHING SYSTEMS	1	39	39	-	-	-	8	8
P PERFORMING GENERAL MAINTENANCE AND CORROSION CONTROL TASKS	13	18	18	19	19	19	-	-

- Denotes less than 1 percent

TABLE 3 (CONTINUED)

DISTRIBUTION OF DUTY TIME SPENT BY MEMBERS OF CAREER LADDER
(RELATIVE PERCENT OF JOB TIME)

<u>DUTIES</u>	<u>COM</u>		<u>QC/</u>	<u>RESIDENCE</u>		<u>SUPV/</u>	<u>FUNC</u>
	<u>LIAISON</u>	<u>QA</u>		<u>TRAINERS</u>	<u>MGMT</u>		<u>MGRS</u>
A ORGANIZING AND PLANNING	10	21	-	25	21		
B DIRECTING AND IMPLEMENTING	10	12	6	15	12		
C INSPECTING AND EVALUATING	5	17	8	18	17		
D TRAINING	3	23	85	13	23		
E PERFORMING ADMINISTRATIVE OR SUPPLY TASKS	15	10	-	9	10		
F PERFORMING DIAL SERVICES ADMINISTRATOR TASKS	5	3	-	2	-		
G PERFORMING JOB CONTROL TASKS	41	-	-	3	3		
H MAINTAINING SPECIAL CIRCUITS AND ANTICILLARY EQUIPMENT ON DIGITAL SWITCHED SYSTEMS	1	2	-	3	2		
I PERFORMING CUSTOMER SERVICE TASKS	6	2	-	2	2		
J MAINTAINING DIGITAL SWITCHING CENTRAL CONTROL SYSTEMS	-	-	-	1	-		
K MAINTAINING DIGITAL SWITCHING NETWORKS	-	-	-	1	-		
L MAINTAINING DIGITAL LINE AND TRUNK INTERFACE EQUIPMENT	2	-	-	1	-		
M MAINTAINING DIGITAL SWITCHING INPUT/OUTPUT EQUIPMENT	-	-	-	1	-		
N PERFORMING ENGINEERING AND INSTALLATION TASKS	-	7	-	2	7		
O MAINTAINING ELECTROMECHANICAL TELEPHONE SWITCHING SYSTEMS	-	-	-	3	-		
P PERFORMING GENERAL MAINTENANCE AND CORROSION CONTROL TASKS	2	2	-	1	2		

- Denotes less than 1 percent

TABLE 4

SELECTED BACKGROUND DATA FOR SPECIALTY JOBS

	DIGITAL SWITCHING SYSTEMS (ST57)	ELECTRO- MECHANICAL SWITCHING SYS MAINT (ST70)	E&I TEAM (ST72)	JOB CONTROL (ST67)
NUMBER IN GROUP	209	15	24	4
PERCENT OF SAMPLE	47%	4%	5%	*
PERCENT IN CONUS	62%	87%	92%	50%
DAFSC DISTRIBUTION				
36231	15%	13%	4%	0%
36251	62%	73%	67%	100%
36271	22%	13%	29%	0%
PREDOMINANT PAYGRADE				
AVERAGE T1CF (MOS)	E-4	E-4	E-4	E-4
AVERAGE TAFMS (MOS)	80	64	98	51
PERCENT IN FIRST ENLISTMENT	92	96	110	57
PERCENT SUPERVISING	55%	47%	30%	100%
AVERAGE NUMBER OF TASKS PERFORMED	47%	33%	33%	0%
	117	97	46	10

* Denotes less than 1 percent

TABLE 4 (CONTINUED)

SELECTED BACKGROUND DATA FOR SPECIALTY JOBS

	COMMERCIAL LIAISONS (ST26)	QC/ QA (GP42)	RESIDENT TRAINING INSTRS (ST175)	SUPVY/ MGMT (ST51)	FUNCTIONAL MANAGERS (ST31)
NUMBER IN GROUP	12	13	4	80	18
PERCENT OF SAMPLE	3%	3%	*	18%	4%
PERCENT IN CONUS	75%	54%	100%	51%	67%
DAFSC DISTRIBUTION					
36231	0%	8%	0%	0%	0%
36251	58%	38%	75%	24%	17%
36271	42%	54%	25%	75%	83%
PREDOMINANT PAYGRADES					
AVERAGE TICF (MOS)	E-5	E-7	E-5	E-6	E-7
AVERAGE TAFMS (MOS)	130	123	109	152	193
	134	143	111	172	207
PERCENT IN FIRST ENLISTMENT					
PERCENT SUPERVISING	0%	0%	8%	1%	0%
AVERAGE NUMBER OF TASKS PERFORMED	0%	42%	46%	92%	11%
	15	24	32	81	15

* Denotes less than 1 percent

- I. **DIGITAL SWITCHING SYSTEMS MAINTENANCE CLUSTER**
(ST57, N=209)
 - A. **Digital Switch Maintenance Job** (ST98, N=140)
 - B. **Cable Engineer Job** (ST113, N=12)
- II. **ELECTROMECHANICAL SWITCHING SYSTEMS MAINTENANCE JOB**
(ST70, N=15)
- III. **ENGINEERING AND INSTALLATION (E & I) TEAM JOB** (ST72, N=24)
- IV. **JOB CONTROL JOB** (ST67, N=4)
- V. **COMMERCIAL LIAISONS JOB** (ST26, N=12)
- VI. **QUALITY CONTROL/QUALITY ASSURANCE CLUSTER** (GP42, N=13)
- VII. **RESIDENT TRAINING INSTRUCTORS JOB** (ST175, N=4)
- VIII. **SUPERVISORY/MANAGEMENT CLUSTER** (ST51, N=80)
 - A. **NCOIC Job** (ST116, N=61)
 - B. **Wire Branch Chiefs Job** (ST94, N=7)
- IX. **FUNCTIONAL MANAGERS CLUSTER** (ST31, N=18)

The respondents forming these groups account for 83 percent of the survey sample. The remaining 17 percent of the respondents perform tasks or series of tasks which did not allow the program to group them with members of these jobs. Some examples of respondents performing these highly unique jobs included the Career Development Course (CDC) Writer, the Bids Management System Administrator, Base Land Mobile Radio Manager, Command Control Switch Maintenance personnel, and first-enlistment personnel performing a few minor tasks associated with the Digital Switching Systems Maintenance cluster.

Group Descriptions

The succeeding paragraphs contain descriptions of the clusters and jobs. Representative tasks for each of the identified clusters and jobs are contained in Appendix A.

I. DIGITAL SWITCHING SYSTEMS MAINTENANCE CLUSTER (ST57).

Digital Switching Systems Maintenance is the core work of the career ladder. Most of the work involved in the cluster is technical in nature. Much of the job involves general maintenance and corrosion control tasks, maintaining digital line and trunk interface equipment, and supply functions. This includes isolating malfunctions to various systems and performing preventative maintenance inspections. The cluster encompasses an average of 117 tasks, a substantially higher number than that of other jobs in the career ladder. Two clearly identifiable jobs were found within this cluster.

A. **Digital Switch Maintenance Job (ST98).** Members of this job spend the largest portion of their time on the maintenance of the digital switch. This is a very broad job, with incumbents reporting an average of 140 tasks performed. General maintenance, maintenance of special circuits and ancillary equipment, customer service tasks, and the isolation of malfunctions to various input/output devices are core functions of this job and account for 48 percent of their job time. Typical tasks include:

- accessing lines and trunks from maintenance positions
- isolating malfunctions to duress or intrusion alarm circuits
- inspecting batteries for corrosion
- programming features
- wrapping or unwrapping terminals
- isolating malfunctions to dial lines
- removing or replacing jumpers
- coordinating telephone installation activities with inside
or outside plants
- removing or replacing circuit cards or electrical card assemblies
- restoring permanent lock-outs
- coordinating troubleshooting with outside agencies

Digital Switch Maintenance personnel average 8 years of service, 35 percent are in their first enlistment, and most hold the 5-skill level. The predominant paygrade is E-4, with 89 percent in paygrades E-3 through E-5.

B. **Cable Engineer Job (ST113).** Twelve respondents performed the Cable Engineer job. Cable Engineers performed a relatively large number of common tasks (106). This job was distinguished by the time incumbents spend on tasks relating to removing, replacing, marking, mounting, testing, and drilling holes for the installation of cables. In addition to the cable installation and maintenance tasks, this job involves many general maintenance functions. Forty-four percent of the duty time of the members of this job is spent performing general maintenance tasks and E & I tasks. Examples of cable maintenance and installation tasks performed by members of this job include:

- forming cables
- fanning cables
- marking, cutting, stripping, and butting cables
- running cables
- isolating malfunctions to cables
- removing or replacing twisted pair cables
- terminating cables with punch-on devices
- updating telephone system cable records

Respondents holding this job are of the 3- and 5-skill level. Seventeen percent of the incumbents were in their first enlistment. The average time in service for the job was 7 years and 6 months, with the predominant paygrade being E-5.

II. ELECTROMECHANICAL SWITCHING SYSTEMS MAINTENANCE JOB (ST70). The Electromechanical Switching job is rapidly disappearing as electromechanical devices are being phased out of use in Air Force telephone systems. The 15 members of this job represent only 3 percent of the overall sample. This job involves a few of the same technical tasks that existed in the Digital Switching Systems Maintenance cluster; however, much of the job involves adjusting or aligning electrical and mechanical switches, relays and contacts, and other general maintenance functions for electromechanical telephone switches. Typical tasks for this job include:

- adjusting or aligning relay contacts
- adjusting or aligning electrical switches
- performing PMIs on mechanical switches
- adjusting or aligning wiper contacts
- assembling or disassembling mechanical switches
- isolating malfunctions to central office switch boards
- performing PMIs on step-by-step switching equipment
- adjusting or aligning mechanical relays
- tracing calls using trunking schematics or bay cards
- isolating malfunctions within step-by-step switching equipment
- adjusting or aligning mechanical switches

Members of this job average 8 years of active duty service, and 67 percent hold the 5-skill level. Thirteen percent of the incumbents are located overseas. Only one of the incumbents in this job is in their first enlistment. The predominant paygrade for the group is E-4.

III. ENGINEERING AND INSTALLATION TEAM JOB (ST72). Incumbents performing the E & I Team job spend about 57 percent of their job time on tasks related to installing new telephone switching systems and making modifications to existing systems. Members of the E & I Team spend much of their time performing initial installations of cable runs, jumpers, and under floor conduit systems. The average number of tasks performed in this job is 46. The 24 respondents making up this job represent 5 percent of the total sample. Some typical tasks include:

- marking, cutting, stripping, and butting cables
- forming cables
- fanning cables
- performing initial installation of cable runs
- running cables
- performing initial installation of jumpers
- performing cable operational tests
- terminating cables with punch-on devices
- performing initial installations of cables under floor conduit systems
- interpreting blueprints
- drilling holes for mounting cable runs

Members in this job have an average of 9 years of service. Only one of the incumbents is in their first enlistment. Ninety-two percent are assigned to CONUS. Most of these incumbents (79 percent) are in paygrades E-4 and E-5. There is an even division of 5- and 7-skill level personnel.

IV. JOB CONTROL JOB (ST67). The Job Control job represents less than 1 percent of the sample. Respondents spent most of their time performing maintenance coordination tasks and little time on technical tasks. The average number of tasks performed is only 10. Eighty-two percent of their relative job time is spent performing Job Control, organizational, and administrative tasks, such as:

- assigning job control numbers
- coordinating trouble shooting with outside agencies
- preparing briefings
- coordinating jobs, outages, or maintenance with job control
- annotating work orders
- determining work priorities
- directing maintenance of equipment and supplies
- coordinating leased equipment malfunctions with commercial telephone companies
- reviewing telephone work order logs

Two of these four respondents are located overseas. All four are 5-skill level personnel, and all four are in paygrade E-4. They average 5 1/2 years of service, and two are in their first enlistment.

V. COMMERCIAL LIAISONS JOB (ST26). The 12 respondents in the Commercial Liaisons job represent 3 percent of the total sample. The job is almost exclusively dealing with outside agencies regarding maintenance and installation of telephone systems. The incumbents performed an average of 24 tasks. Although members of this job report spending 56 percent of their job time performing administrative and job control tasks, this job differs from the Job Control job in the amount of time spent dealing with commercial agencies (over 28 percent of the relative job time). The typical tasks include:

- coordinating telephone installations with base units or
commercial telephone companies
- coordinating leased equipment malfunctions with commercial
telephone companies
- logging requirements for telephone installations
- coordinating circuit of trunk outages with commercial telephone
companies
- coordinating troubleshooting with outside agencies

Most of the members of this job are 5-skill level personnel, and there are no incumbents in their first enlistment. The average time in service was 11 years. The predominant paygrade is E-5.

VI. QUALITY CONTROL/QUALITY ASSURANCE CLUSTER (GP42). The 13 members of this cluster of jobs perform an average of 32 tasks. Very few of the tasks being performed are technical in nature. Training, establishing and analyzing work methods, and administrative tasks are the primary functions of this cluster. Thirty-nine percent of the incumbents' relative job time is spent training, inspecting, and evaluating personnel or procedures. An additional 20 percent of the job time is spent planning work controls, briefings, and other organizational duties. Some typical tasks are:

- writing staff studies or special reports
- interpreting policies, directives, or procedures
for personnel
- writing EPRs
- evaluating individual training needs
- evaluating inspection report findings
- performing test analyses

- evaluating personnel for promotion, demotion,
or reclassification
- evaluating personnel for compliance with safety standards
- analyzing workload requirements
- establishing work methods
- establishing work controls
- inspect station grounds for corrosion
- inspect bus bars for corrosion
- inspect frames for corrosion

Overall, the group has an average of almost 12 years of service. The predominant paygrade is E-7, and 62 percent of the group hold the 7-skill level.

Two jobs were identified within this cluster, the Corrosion Control Inspectors job and the Quality Control Inspectors job.

The Corrosion Control Inspectors job is a small group of inspectors spending 20 percent of their time performing corrosion control inspections on power frames. Members of the Corrosion Control Inspectors job performed an average of 49 tasks.

The Quality Control Inspectors job was a group of inspectors spending 50 percent of their relative job time evaluating personnel and workcenters for compliance with standards. An average of 25 tasks are being performed by the members of this job.

VII. RESIDENT TRAINING INSTRUCTORS JOB (ST175). This highly homogeneous group of incumbents are all located at Sheppard AFB, at the Training Wing. The four members of this job spend 85 percent of their relative job time performing training duties. This job involves no technical tasks and virtually no supervisory functions. Conducting classroom training, the administration and scoring of tests, and the preparation of lesson plans are the primary functions being performed in this job. On average, they perform only 11 tasks; these tasks include:

- conducting resident course classroom training
- conducting skill-performance tests
- scoring tests
- preparing lesson plans
- administering tests
- constructing training aids
- procuring training aids, space, or equipment
- performing test analyses
- writing test questions
- evaluating progress of residence course students

The Resident Training Instructors have an average time in service of 9 years. There are two E-5s and three 7-skill level personnel.

VIII. SUPERVISORY/MANAGEMENT CLUSTER (ST51) This cluster of jobs represents the work performed by the majority of senior personnel. These 80 respondents perform an average of 81 tasks, including both administrative and supervisory functions. Most of the inside plant management functions, such as performing evaluations, setting work priorities, establishing work controls, conducting OJT, and delegating additional duties, are managed by these incumbents. The incumbents come from almost every location, with almost 50 percent located overseas. Two jobs were identified within this cluster: the NCOIC and Wire Branch Chiefs jobs.

A. NCOIC Job (ST116) NCOIC is the core job within the Supervisory/Management cluster. An average of 94 tasks are performed by the members of this job. These tasks primarily deal with conducting OJT, coordination of work and inspections, evaluating personnel and training needs, and directing maintenance activities of inside plant maintenance personnel. This job is differentiated from the Wire Branch Chiefs job primarily by the training functions performed by NCOIC personnel. Typical tasks for the NCOIC job include:

- counseling personnel on personal or military-related matters
- determining work priorities
- planning details or additional duties
- planning work assignments
- evaluating individual training needs
- interpreting policies, directives, or procedures for personnel
- annotating OJT records
- conducting OJT
- evaluating progress of OJT trainers or trainees
- evaluating inspection report findings or procedures
- performing self-inspections

The average time in service for the incumbents was 14 years, 2 months. The majority of the cluster (75 percent) hold the 7-skill level or higher, and the predominant paygrades are E-6 and E-7. Also of interest, 92 percent of the cluster supervised one or more persons.

B. Wire Branch Chiefs Job (ST94) The members of the Wire Branch Chiefs job perform considerably fewer tasks than the NCOIC job, averaging only 29 tasks. Most of these tasks deal with the supervision and management of personnel. Members of this job spend more than twice as much of their job time supervising personnel from specialties other than telephone switching. Similarly, none of the tasks performed in this job are specific to the career field. Some

additional functions of this job involve the implementation of safety, security, quality control and disaster preparedness programs, and the preparation for and conducting of briefings. Some typical tasks are:

- supervising military personnel with AFSCs
other than 362X1
- writing EPRs
- reviewing or endorsing EPRs
- conducting meetings, such as staff, council, board
- counseling personnel on military-related matters
- interpreting policies, directives, or procedures for personnel
- implement security training programs
- implement QC or QA programs
- supervising Telephone Switching Specialists (AFSC 36251)

The incumbents of this job average over 18 years of military service, more than any other job in the career field. The predominant paygrade is E-7, and all of the incumbents are 7- or 9-skill level personnel. Also of interest, the members of the Wire Branch Chiefs job have an average of 16 1/2 years in the career field.

IX. FUNCTIONAL MANAGERS CLUSTER (ST31). The 18 members of this cluster amounted to 4 percent of the overall sample. Much of their time is spent on administrative functions. These primarily senior-level incumbents performed an average of only 15 tasks. Preparing tables, graphs, and diagrams for various meetings, writing special reports, and other administrative staff functions are the core work of the cluster. One-third of the 18 members were stationed overseas. Some typical tasks of the incumbents are:

- conducting meetings, such as staff, council, board
- reviewing correspondence
- writing staff studies or special reports
- developing tables, graphs, or diagrams, other than organizational
charts or status boards
- preparing briefings
- assigning due dates

This group is composed of primarily E-7s. Seventy-eight percent hold the 7-skill level or higher, and 17 percent of the remaining persons hold a primary AFSC other than 362X1. The Total Active Federal Military Service (TAFMS) for this job is 17 years.

Although several variations exist within this cluster, most are small and encompassed preparing for and conducting briefings and related staff functions.

COMPARISON OF CURRENT JOB STRUCTURE TO PREVIOUS STUDY

The current job structure was compared with the previous OSR (AFPT 90-362-797, March 1990). Table 5 lists the major jobs reported in the current study and their equivalents in the previous study. A review of the table reveals there has been a shift from electromechanical to digital switching systems maintenance. This change is indicative of the technological changeover from electromechanical to digital equipment. A review of the table also highlights the decline in the number of E & I team members. This decrease is attributed to the increase in civilian contracting of the duties of that job. This decrease has since included Griffiss AFB, which switched over to contract effective September 1992. Lastly, there has been an increase in the number of supervisory and administrative jobs since the last study.

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, along with the career ladder structure, is an integral part of an OSR. The DAFSC analysis examines the differences in tasks performed by persons of different skill levels. This information can be used to evaluate how well career ladder documents, AFR 39-1 Specialty Descriptions and the STS, reflect what is being done in the field. Table 6 displays the distribution of DAFSCs over career ladder jobs, and Table 7 shows the percent time spent on each duty across skill-level groups.

A typical pattern of progression exists within the AFSC 362X1 career ladder. Personnel at the lowest skill level tended to spend more time performing technical tasks. As experience and skill level increase, personnel begin doing more administrative tasks, but continue to perform many technical tasks. Senior personnel tend to perform almost exclusively administrative and managerial tasks.

Skill-Level Descriptions

DAFSC 36231. The 45 airmen in the 3-skill level group represent 10 percent of the total sample. Performing an average of 71 tasks, the 3-skill level personnel spend 55 percent of their relative job time on technical tasks. These tasks involve general maintenance of switches and input/output devices and isolating malfunctions to system components. As shown in Table 6, 71 percent of the 3-skill level personnel are working in the Digital Switching Systems Maintenance cluster.

TABLE 5

JOB SPECIALTY COMPARISONS BETWEEN CURRENT AND 1990 SURVEYS

CURRENT SURVEY (N=447) AFSC 362X1	PERCENT OF SAMPLE	1990 SURVEY (N=628) AFSC 362X1	PERCENT OF SAMPLE
DIGITAL SWITCHING SYSTEMS MAINTENANCE CLUSTER	47	DIGITAL SWITCHING IJT	-
ELECTROMECHANICAL SWITCHING SYSTEMS MAINTENANCE JOB	4	GENERAL MAINTENANCE CLUSTER	62
ENGINEERING AND INSTALLATION TEAM JOB	5	ENGINEERING AND INSTALLATION CLUSTER	13
JOB CONTROL JOB	-	JOB CONTROL CLUSTER	-
COMMERCIAL LIAISONS JOB	3	IDENTIFIED AS PART OF JOB CONTROL CLUSTER	-
QUALITY CONTROL/QUALITY ASSURANCE CLUSTER	3	IDENTIFIED AS PART OF SUPERVISORY AND ADMINISTRATION CLUSTER	-
RESIDENT TRAINING INSTRUCTORS JOB	-	TRAINING IJT	-
SUPERVISORY/MANAGEMENT CLUSTER	18	SUPERVISORY AND ADMINISTRATION CLUSTER	11
FUNCTIONAL MANAGERS CLUSTER	4	IDENTIFIED AS PART OF SUPERVISORY AND ADMINISTRATION CLUSTER	-

- Denotes less than 1 percent

TABLE 6
DISTRIBUTION OF SKILL-LEVEL PERSONNEL
ACROSS CAREER LADDER JOBS

<u>JOBS</u>	DAFSC 36231 (N=45)	DAFSC 36251 (N=236)	DAFSC 36271 (N=166)
DIGITAL SWITCHING SYSTEMS MAINTENANCE CLUSTER	69%	55%	28%
ELECTROMECHANICAL SWITCHING SYSTEMS MAINTENANCE JOB	4%	5%	4%
ENGINEERING AND INSTALLATION TEAM JOB	2%	7%	4%
JOB CONTROL JOB	0%	1%	0%
COMMERCIAL LIAISONS JOB	0%	3%	2%
QUALITY CONTROL/QUALITY ASSURANCE CLUSTER	2%	2%	4%
RESIDENT TRAINING INSTRUCTORS JOB	0%	1%	-
SUPERVISORY/MANAGEMENT CLUSTER	0%	8%	36%
FUNCTIONAL MANAGERS CLUSTER	0%	1%	9%
NOT GROUPED	23%	15%	13%

- Denotes less than 1 percent

TABLE 7

**RELATIVE PERCENT TIME SPENT PERFORMING DUTIES
BY DAFSC GROUPS**

<u>DUTIES</u>	<u>36231</u> <u>(N=45)</u>	<u>36251</u> <u>(N=236)</u>	<u>36271</u> <u>(N=166)</u>
A ORGANIZING AND PLANNING	4	9	19
B DIRECTING AND IMPLEMENTING	-	4	11
C INSPECTING AND EVALUATING	-	5	14
D TRAINING	1	7	9
E PERFORMING ADMINISTRATIVE AND SUPPLY TASKS	7	9	9
F PERFORMING DIAL SERVICES ADMINISTRATOR TASKS	2	3	3
G PERFORMING JOB CONTROL TASKS	6	7	5
H MAINTAINING SPECIAL CIRCUITS AND ANTICILLARY EQUIPMENT ON DIGITAL SWITCHED SYSTEMS	19	11	6
I PERFORMING CUSTOMER SERVICE TASKS	15	9	4
J MAINTAINING DIGITAL SWITCHING CENTRAL CONTROL SYSTEMS	4	2	2
K MAINTAINING DIGITAL SWITCHING NETWORKS	2	2	1
L MAINTAINING DIGITAL SWITCHING LINE AND TRUNK INTERFACE EQUIPMENT	7	5	3
M MAINTAINING DIGITAL SWITCHING INPUT/OUTPUT EQUIPMENT	6	4	2
N PERFORMING ENGINEERING AND INSTALLATION TASKS	4	7	5
O MAINTAINING ELECTROMECHANICAL TELEPHONE SWITCHING SYSTEMS	4	3	1
P PERFORMING GENERAL MAINTENANCE AND CORROSION	18	12	6

- Denotes less than 1 percent

Table 8 displays representative tasks performed by 3-skill level personnel. These tasks reflect the technical nature of the work 3-levels perform. The tasks being performed by 3-skill level personnel are quite similar to that of 5-skill level personnel.

DAFSC 36251. This group of 236 members (53 percent of the total sample) perform an average of 80 tasks. Five-skill level personnel perform a substantial number of technical tasks, but are distinguished by the increased emphasis on administrative functions, as compared to the 3-skill level members. Table 10 outlines the extreme difference in percent members performing administrative functions between 3- and 5-skill level personnel. Table 9 shows the representative tasks of the group. Fifty-five percent of their relative job time is spent performing 97 tasks. Table 6 shows 55 percent of this group within the Digital Switching Systems Maintenance cluster, with an additional 9 percent falling within the Supervisory/Management cluster. Forty-one percent of the group report having supervisory responsibilities.

DAFSC 36271. Seven-skill level personnel, representing 37 percent of the sample, perform an average of 83 tasks. The members of this group perform a substantial number of supervisory and managerial tasks. These tasks primarily deal with the supervision, training, and evaluation of personnel and the determination and coordination of work priorities and equipment maintenance. A review of Table 6 shows a large part (36 percent) of this group are in the Supervisory/Management cluster. Another 28 percent fall in the Digital Switching Systems Maintenance cluster. Almost half of all 7-skill level personnel are in one of the managerial job clusters. Table 11 shows the representative tasks of the personnel in this group. As noted, the tasks are mostly administrative or managerial in nature. Sixty-nine percent of the group report having supervisory responsibilities. These 166 respondents spend 55 percent of their relative job time performing 80 tasks. Unlike the 3- and 5-skill level personnel, the typical 7-skill level respondent spends very little time performing technical functions. The most commonly performed task of both 3- and 5-skill level personnel (wrapping and unwrapping terminals) is one that is performed by few 7-skill level personnel (see Table 12). This task is very much indicative of the decrease in technical performance seen among 7-skill level personnel.

Summary

Personnel in AFSC 362X1 progress typically through the career ladder. The 3-skill level personnel spend the majority of their time performing technical tasks. Five-skill level personnel perform technical tasks, along with increased numbers of administrative and supervisory tasks. Seven-skill level personnel perform almost exclusively administrative and managerial tasks, with very few technical tasks.

TABLE 8**REPRESENTATIVE TASKS PERFORMED BY
3-SKILL LEVEL PERSONNEL**

TASKS	PERCENT MEMBERS PERFORMING (N=45)
P465 Wrap or unwrap terminals	91
P460 Remove or replace jumpers	82
I236 Isolate malfunctions to direct lines	75
H194 Measure capacitance levels	73
P451 Isolate malfunctions to jumpers	71
I235 Isolate malfunctions to dial lines	68
H210 Remove or replace circuit cards or electrical card assemblies	67
H195 Measure voltage levels	67
I245 Isolate malfunctions to single-line telephones	67
P463 Solder or desolder terminals	67
L276 Access line and trunks from maintenance positions (MAPs)	64
H199 Perform busy out procedures	64
H201 Perform PMIs on air filters	64
P439 Inspect batteries for corrosion	62
H211 Remove or replace fuses	60
N353 Perform initial installations of jumpers	55
I239 Isolate malfunctions to fire alarm circuits	55
G167 Coordinate troubleshooting with outside agencies	55
I234 Isolate malfunctions to data circuits printers, and drives	55
H200 Perform loop resistance or insulation tests	53
J260 Take software images or database backups	53
I237 Isolate malfunctions to duress or intrusion alarm circuits	51
M314 Perform PMIs on input/output (I/O) devices, such as VDUs, printers, and drives	51
I248 Trace calls using visual display units (VDUs)	51
P442 Inspect frames for corrosion	51
M307 Isolate malfunctions to attendant consoles	51
E143 Update telephone system cable records	49
G162 Assign job control numbers	49
P464 Terminate cables with punch-on devices	49
G165 Coordinate telephone installation activities with inside or outside plants	49
H226 Service batteries	49
A6 Coordinate jobs, outages, or maintenance with job control	49
M309 Isolate malfunctions to input/output controllers (IOCs)	49

TABLE 9

**REPRESENTATIVE TASKS PERFORMED BY
5-SKILL LEVEL PERSONNEL**

TASKS	PERCENT MEMBERS PERFORMING (N=236)
P465 Wrap or unwrap terminals	68
P460 Remove or replace jumpers	63
A6 Coordinate jobs, outages or maintenance with job control	61
I235 Isolate malfunctions to dial lines	60
I245 Isolate malfunctions to single-line telephones	58
I236 Isolate malfunctions to direct lines	56
P451 Isolate malfunctions to jumpers	53
G167 Coordinating troubleshooting with outside agencies	52
H211 Remove or replace fuses	52
H210 Remove or replace circuit cards or electrical card assemblies	52
I237 Isolate malfunctions to duress or intrusion alarm circuits	51
I241 Isolate malfunctions to inside wiring	49
H195 Measure voltage levels	49
I248 Trace calls using visual display units (VDUs)	48
P464 Terminate cables with punch-on devices	48
I243 Isolate malfunctions to multiline telephones	48
G170 Program features	48
G165 Coordinate telephone installation activities with inside or outside plant	47
M307 Isolate malfunctions to attendant consoles	47
D79 Annotate on-the-job training records	47
G162 Assign job control numbers	47
I234 Isolate malfunctions to data circuits	45
P463 Solder or desolder terminals	45
J260 Take software images or database backups	45
H201 Perform PMIs on air filters	44
A13 Determine work priorities	44
G163 Coordinate circuit or trunk outages with commercial telephone companies	44
P442 Inspect frames for corrosion	43
I239 Isolate malfunctions to fire alarm circuits	43

TABLE 10

**REPRESENTATIVE TASK DIFFERENCES BETWEEN 3-SKILL LEVEL AND 5-SKILL LEVEL PERSONNEL
(PERCENT MEMBERS PERFORMING)**

<u>TASKS</u>	DAFSC 36231 (N=45)	DAFSC 36251 (N=236)	<u>DIFFERENCE</u>
H194 Measure capacitance levels	73	39	34
H199 Perform busy-out procedures	64	39	25
P465 Wrap or unwrap terminals	91	68	23
L276 Access lines and trunks from maintenance positions	64	42	22
L301 Remove or replace cards in remote line modules	38	16	22
P463 Solder or desolder terminals	67	45	22
H201 Perform PMIs on air filters	64	44	20
<hr/>			
D79 Annotate on-the-job training records	4	46	-42
C77 Write EPRs	2	37	-35
C50 Counsel personnel on military related matters	0	33	-33
C55 Counsel personnel for compliance with safety standards	0	31	-31
C54 Evaluate personnel for compliance with performance	0	31	-31
D86 Counsel trainers or trainees on training progress	0	30	-30

TABLE 11
REPRESENTATIVE TASKS PERFORMED BY
7-SKILL LEVEL PERSONNEL

<u>TASKS</u>	PERCENT MEMBERS PERFORMING (N=166)
C77 Write EPRs	67
A13 Determine work priorities	64
C68 Review correspondence	61
C50 Counsel personnel on personal or military-related matters	60
A9 Determine equipment or supply requirements	58
C54 Evaluate personnel for compliance with performance standards	56
D81 Conduct OJT	56
D79 Annotate on-the-job training (OJT) records	56
A6 Coordinate jobs, outages, or maintenance with job control	56
D91 Evaluate individual training needs	54
B41 Interpret policies, directives , or procedures for personnel	53
A23 Prepare briefings	52
C55 Evaluate personnel for compliance with safety standards	52
B29 Assign due dates	51
A25 Schedule leaves or temporary duty (TDY) assignments	51
A20 Plan details or additional duties	51
C65 Perform self inspections	51
D87 Determine training requirements	50
A19 Establish work methods	50
A12 Determine telephone maintenance requirements	49
A3 Conduct meetings such as staff, council, board	48
A5 Coordinate installation of equipment with contract personnel or associated system personnel	48
A22 Plan work assignments	48
B46 Supervise Telephone Switching Specialists (AFSC 36251)	47
C51 Evaluate individuals for promotion, demotion, or reclassification	47
A18 Establish work controls	47
A17 Establish performance standards for personnel	47
D86 Counsel trainers or trainees on training progress	46
A8 Coordinate quality control (QC) or quality assurance (QA) inspections with inspectors	46

TABLE 12

REPRESENTATIVE TASK DIFFERENCES BETWEEN 5- AND 7-SKILL LEVEL PERSONNEL
(PERCENT MEMBERS PERFORMING)

<u>TASKS</u>	DAFSC 36251 (N=236)	DAFSC 36271 (N=166)	<u>DIFFERENCE</u>
P460 Remove or replace jumpers	63	37	26
P465 Wrap or unwrap terminals	68	42	26
I237 Isolate malfunctions to duress or intrusion alarm circuits	50	25	25
I245 Isolate malfunctions to single-lines telephones	58	33	25
I235 Isolate malfunctions to dial lines	60	37	23
N353 Perform initial installation of jumpers	37	14	23
I239 Isolate malfunctions to fire alarm circuits	43	20	23
<hr/>			
C68 Review correspondence	16	61	-45
A25 Schedule leaves or temporary duty (TDY) assignments	10	51	-41
B29 Assign due dates	14	51	-37
A3 Conduct meetings, such as staff, council, or board	13	48	-35
B41 Interpret policies, directives, or procedures for personnel	19	53	-34
A23 Prepare briefings	18	52	-34
C52 Evaluate inspection report findings or procedures	14	46	-31

ANALYSIS OF AFR 39-1 SPECIALTY DESCRIPTIONS

Survey data were compared to the AFR 39-1 Specialty Descriptions for Telephone Switching Specialists (AFSCs 36211/36231/36251) and Telephone Switching Technician (AFSC 36271) dated 15 March 1991, effective 30 April 1991. The descriptions of the 3-, 5-, and 7-skill levels were well supported by the data. The descriptions accurately depict the highly technical aspects of the job, as well as the administrative duties performed by 5-level personnel. The descriptions also outline the increase in supervisory responsibilities for 7-skill level personnel. The descriptions generally capture the responsibilities of the job groups identified in the career ladder structure as well.

Effective 31 October 1993, AFSC 362X1 will become AFSC 2E7X1. In addition, 3-, 5-, and 7-skill level job titles will change to Telephone Switching Apprentice, Telephone Switching Journeymen, and Telephone Switching Craftsmen, respectively.

TRAINING ANALYSIS

Occupational surveys provide a source of information that can be very useful in the development of training programs. Through the use of OSR data, one can more accurately determine what first-enlistment personnel are doing as a group and subsequently develop or refine training programs to be more suitable to their needs. Factors used in evaluating training include the overall description of jobs performed by first-enlistment personnel, the distribution of first-enlistment personnel (1-48 months' TAFMS) among career ladder jobs, percentages of first-enlistment and first-job (1-24 months' TAFMS) personnel using certain equipment, and TE and TD ratings (previously explained in the SURVEY METHODOLOGY section).

First-Enlistment Personnel

In AFSC 362X1, there were 79 airmen in their first enlistment. They represented 18 percent of the total sample. Figure 2 shows the distribution of first-enlistment personnel in the jobs identified in the career ladder structure analysis. Sixty-eight percent of those in their first enlistment are working within the Digital Switching Systems Maintenance cluster. Because of the large amounts of training taking place among first-enlistment personnel, almost one-fourth of them were not grouped with any of the identified career ladder jobs. The remainder of the first-enlistment personnel are scattered within other career ladder jobs.

First-enlistment personnel perform mostly technical tasks involving the isolation of malfunctions to components such as jumpers, multiline telephones, direct lines, and dial lines. They also perform various kinds of jumper maintenance, including measuring voltage levels, removal and replacement, and measuring capacitance levels. As shown in Table 13, 57 percent of

AFSC 362X1 FIRST ENLISTMENT JOB STRUCTURE

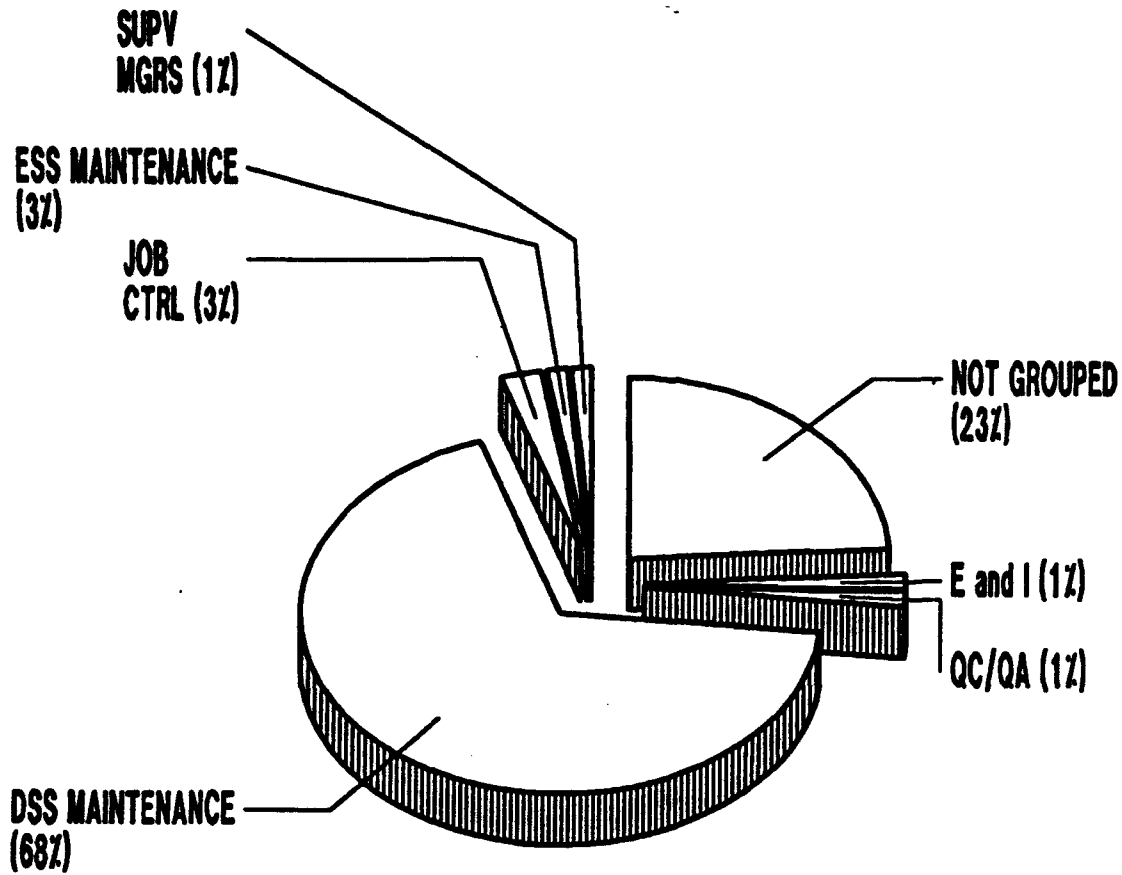


FIGURE 2

TABLE 13
RELATIVE TIME SPENT ON DUTIES BY
FIRST-ENLISTMENT PERSONNEL
(N=79)

<u>DUTIES</u>	<u>PERCENT TIME SPENT</u>
A ORGANIZING AND PLANNING	5
B DIRECTING AND IMPLEMENTING	2
C INSPECTING AND EVALUATING	1
D TRAINING	1
E PERFORMING ADMINISTRATIVE OR SUPPLY TASKS	8
F PERFORMING DIAL SERVICES ADMINISTRATOR TASKS	3
G PERFORMING JOB CONTROL TASKS	7
H MAINTAINING SPECIAL CIRCUITS AND ANTICILLARY EQUIPMENT ON DIGITAL SWITCHED SYSTEMS	18
I PERFORMING CUSTOMER SERVICE TASKS	15
J MAINTAINING DIGITAL SWITCHING CENTRAL CONTROL SYSTEMS	4
K MAINTAINING DIGITAL SWITCHING NETWORKS	2
L MAINTAINING DIGITAL SWITCHING LINE AND TRUNK INTERFACE EQUIPMENT	6
M MAINTAINING DIGITAL SWITCHING INPUT/OUTPUT EQUIPMENT	5
N PERFORMING ENGINEERING AND INSTALLATION TASKS	4
O MAINTAINING ELECTROMECHANICAL TELEPHONE SWITCHING SYSTEMS	2
P PERFORMING GENERAL MAINTENANCE AND CORROSION CONTROL TASKS	16

NOTE: Columns may not add to 100 percent due to rounding

their relative job time is spent performing technical duties. Table 14 shows some of the tasks being performed by first-enlistment personnel.

TE and TD Data

TE and TD data are secondary factors that can assist technical school personnel in deciding what tasks should be emphasized in entry-level training. These ratings, based on the judgment of senior Telephone Switching NCOs working at operational units in the field, were collected to provide training personnel with a rank ordering of tasks considered important for formal training (TE), along with a measure of the difficulty of those tasks (TD). These data, when combined with percent of first-enlistment personnel performing tasks, can be used to determine if training adjustments are necessary.

To assist training development personnel, USAFOMS developed a computer program that uses these task factors and the percentage of first-enlistment personnel performing tasks to produce Automated Training Indicators (ATI). ATI correspond to training decisions listed and defined in the Training Decision Logic Table found in Attachment 1, ATR 52-22. ATI allows training developers to quickly focus attention on those tasks which are most likely to qualify for ABR course consideration.

Various lists of tasks, accompanied by TE and TD ratings, are contained in the TRAINING EXTRACT package and should be reviewed in detail by technical school personnel. For a more detailed explanation of TE and TD, see Task Factor Administration in the SURVEY METHODOLOGY section of this report.

Table 15 lists the tasks rated highest in TE. Included for each task are the percentage of first-job and first-enlistment personnel performing and the TD rating. Most of these tasks are technical tasks relating to the isolation of malfunctions to central control systems on digital switches and the removal and replacement of circuit cards.

Tasks having the highest TD ratings are listed in Table 16. The tasks of most concern for training are those with over 20 percent of the first-enlistment personnel performing. These are basically technical tasks involved with the isolation of malfunctions to parts of digital switches. Many of the tasks listed have low percent members performing, and several of the tasks have low TE.

TABLE 14

**REPRESENTATIVE TASKS PERFORMED BY
FIRST-ENLISTMENT PERSONNEL**

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING (N=79)</u>
P465 Wrap or unwrap terminals	82
P460 Remove or replace jumpers	78
I236 Isolate malfunctions to direct lines	73
P451 Isolate malfunctions to jumpers	68
I245 Isolate malfunctions to single line telephones	67
H195 Measure voltage levels	65
H194 Measure capacitance levels	65
H210 Remove or replace circuit cards or electrical card assemblies	65
I235 Isolate malfunctions to dial lines	63
H201 Perform PMIs on air filters	62
H199 Perform busy-out procedures	61
L276 Access lines and trunks from maintenance positions (MAPs)	58
I239 Isolate malfunctions to fire alarm circuits	58
P439 Inspect batteries for corrosion	58
H211 Remove or replace fuses	58
G167 Coordinate troubleshooting with outside agencies	57
I237 Isolate malfunctions to duress or intrusion alarm circuits	56
J260 Take software images or database backups	55
P463 Solder or desolder terminals	55
G162 Assign job control numbers	54
I234 Isolate malfunctions to data circuits	54
H200 Perform loop resistance or insulation tests	54
I248 Trace calls using visual display units (VDUs)	53
A6 Coordinate jobs, outages, or maintenance with job control	52
G165 Coordinate telephone installation activities with inside or outside plants	52
I243 Isolate malfunctions to multiline telephones	51
H226 Service batteries	51

TABLE 15

TASKS RATED HIGHEST IN TE

<u>TASKS</u>	<u>PERCENT</u> <u>MEMBERS PERFORMING</u>				<u>TASK</u> <u>DIFF**</u>
	<u>TNG</u> <u>EMP*</u>	<u>1ST JOB</u> <u>(N=24)</u>	<u>1ST ENL</u> <u>(N=79)</u>		
J258 Remove or replace cards in CPUs	5.83	46	42		5.52
H210 Remove or replace circuit cards or electrical card assemblies	5.83	63	65		4.44
J259 Remove or replace circuit cards	5.78	46	46		5.54
J254 Isolate malfunctions to central processing units (CPUs)	5.71	38	43		6.75
J253 Isolate malfunctions to central message controllers	5.68	42	39		6.55
J255 Isolate malfunctions to links	5.68	38	39		6.91
L276 Access lines and trunks from maintenance positions (MAPs)	5.68	58	58		4.26
H184 Interpret drawings, diagrams, or schematics	5.61	21	27		6.35
H206 Perform transmission level tests	5.61	29	33		5.20
I241 Isolate malfunctions to inside wiring	5.59	33	49		5.14
M309 Isolate malfunctions to input/output controllers (IOCs)	5.56	46	43		6.16
I235 Isolate malfunctions to dial lines	5.56	63	63		4.93
I247 Trace calls using log reports	5.56	38	42		5.08
H226 Service batteries	5.56	54	51		4.12
M307 Isolate malfunctions to attendant consoles	5.54	50	48		5.80

* TE Mean = 2.80 S.D. = 1.53

** TD Mean = 5.00 S.D. = 1.00

TABLE 15 (CONTINUED)

TASKS RATED HIGHEST IN TE

<u>TASKS</u>	<u>PERCENT</u> <u>MEMBERS PERFORMING</u>				<u>TASK</u> <u>DIFF**</u>
	<u>TNG</u> <u>EMP*</u>	<u>1ST JOB</u> <u>(N=24)</u>	<u>1ST ENL</u> <u>(N=79)</u>		
H197 Mount system tapes	5.49	25	41		4.46
H182 Check diagnostic failure using trouble locating procedures	5.46	46	46		6.01
J257 Remove or replace cards in central message controllers	5.46	46	43		5.70
P465 Wrap or unwrap terminals	5.46	88	82		3.14
H211 Remove or replace fuses	5.46	50	58		3.17
P460 Remove or replace jumpers	5.44	75	78		3.25
J256 Isolate malfunctions to memory cards	5.39	46	43		6.73
I248 Trace calls using visual display units	5.39	50	53		4.60
M310 Isolate malfunctions to magnetic tape drive units	5.39	46	43		6.06
I236 Isolate malfunctions to direct lines	5.37	71	73		4.87
H201 Perform PMIs on air filters	5.34	63	62		2.69

* TE Mean = 2.80 S.D. = 1.53

** TD Mean = 5.00 S.D. = 1.00

TABLE 16

TASKS RATED HIGHEST IN TD

TASKS	TASK DIF*	PERCENT MEMBERS PERFORMING				TNG EMP**
		1-48 TAFMS (N=79)	5 LEVEL (N=236)	7 LEVEL (N=166)		
D89 Develop resident course curriculum materials, plans of instruction (POIs) or specialty training standards (STSs)	7.40	1	4	6	.54	
D90 Develop training programs	7.19	3	19	36	1.05	
H189 Isolate malfunctions to integrated systems digital networks	7.01	9	11	8	4.02	
B48 Write staff studies or special reports	6.98	1	10	37	.54	
F156 Load transmission data	6.97	14	20	22	3.54	
K265 Isolate malfunctions to network junctors	6.93	29	26	20	5.10	
K264 Isolate malfunctions to network cross points	6.93	27	23	20	5.00	
K266 Isolate malfunctions to network links	6.93	37	31	23	5.22	
J255 Isolate malfunctions to links	6.91	39	33	26	5.68	
H187 Isolate malfunctions to the central message buffer of the KNS4100	6.88	10	6	6	4.07	
O397 Perform initial installations of automatic equipment routines	6.86	13	10	10	4.22	
L286 Isolate malfunctions to or on fiber optic multiplexers	6.81	8	1	1	1.07	

* TD Mean = 5.00 S.D. = 1.00

** TE Mean = 2.80 S.D. = 1.53

TABLE 16 (CONTINUED)

TASKS RATED HIGHEST IN TD

TASKS	TASK DIF*	PERCENT MEMBERS PERFORMING				TNG EMP**
		1-48	5 LEVEL (N=236)	7 LEVEL (N=166)		
		TAFMS (N=79)				
L287	6.77	6	9	7	4.00	
H223	6.75	19	21	10	3.93	
J254	6.75	43	36	26	3.05	
J256	6.73	43	35	23	5.39	
K268	6.73	29	25	26	5.15	
K267	6.73	30	26	20	5.15	
H219	6.71	3	4	21	2.29	
H188	6.71	8	12	2	4.63	
D82	6.68	3	4	10	.85	
H224	6.65	13	17	5	2.66	
F157	6.65	20	24	22	2.71	
M318	6.64	18	22	28	4.56	

* TD Mean = 5.00 S.D. = 1.00

** TE Mean = 2.80 S.D. = 1.53

Specialty Training Standard (STS)

A review of the STS 362X1, dated February 1990, was made by comparing survey data to matched STS entries. The STS entries were matched with tasks from the inventory by training school personnel at Sheppard AFB. The tasks related to paragraphs and subparagraphs of the STS were displayed with percent members performing data, task factor ratings, and ATI. A preliminary copy of these data has been forwarded to the technical school for use in the upcoming revisions of the STS.

Tasks performed by 20 percent or more of criterion groups are considered to be supported by the OSR data and generally should be included in the STS. Similarly, tasks performed by less than 20 percent of criterion groups should be considered for deletion.

The criterion groups found to be most useful in these analyses are first-job (1-24 months' TAFMS), first-enlistment (1-48 months' TAFMS), 5-skill level, and 7-skill level groups. There were 57 STS entries unsupported by OSR data. Examples of these unsupported paragraphs are listed in Table 16.

Due to the vast changes in technology over the last 3 years, large portions of the STS are not supported by the data. Almost every subsection of paragraph 17 (X-Y DIAL CENTRAL OFFICE EQUIPMENT) and paragraph 18 (FOUR WIRE TELEPHONE TERMINAL EQUIPMENT FOR AUTOVON INTERFACE DIAL CENTRAL OFFICES) are not supported by the data. In addition, most of the subsections of paragraph 16c (Preventative Maintenance) and large portions of paragraph 7 (PROJECT/MOBILE DEPOT MAINTENANCE GENERAL ACTION) regarding project implementation are also not unsupported.

A complete listing of STS paragraphs not supported by OSR data is included in the Training Extract. Because there are so many, only a sample is listed in Table 17. Training personnel should conduct a thorough review of the STS printout in the TRAINING EXTRACT to determine what should be retained in the STS. The electromechanical switching entries are outdated, as only 3 percent of the sample are maintaining the switches and very low percentages of personnel perform the tasks.

Five tasks were performed by more than 20 percent of personnel within criterion groups and were not matched to the STS. They are listed in Table 18. These tasks should be reviewed by training personnel to determine if they suggest material that should be included in the STS.

TABLE 17

EXAMPLES OF STS ITEMS NOT SUPPORTED BY OSR DATA

STS	REFERENCE/TASKS	COURSE PROF CODE	TNG EMP*	PERCENT MEMBERS PERFORMING				TASK DIFF**
				3-LEVEL 1ST ENL (N=79)	5-SKILL LEVEL (N=236)	7-SKILL LEVEL (N=166)		
5c.	Apply Time Compliance Technical Order instructions	--						
	E120. Complete material or publication forms deficiency reports		1.76	3	7	9		4.84
6a(3)(a).	Work assignments	--						
	E124 Develop maintenance schedules		1.00	1	3	17		4.55
7j.	Conduct Project implementation MDM/Pre MDM inspection	--						
	E119 Compile pre-implementation surveys (PISs)		.68	1	2	2		4.91
	N363 Perform project implementation surveys		1.05	0	2	4		5.93
8a(1).	Develop plans for project implementation	--						
	E119 Compile pre-implementation surveys (PISs)		.68	1	2	2		4.91
	N331 Interpret blueprints		2.90	5	11	8		5.63
	N332 Interpret floor plans		2.95	3	11	13		5.21

* TE Mean = 2.80 S.D. = 1.53

** TD Mean = 5.00 S.D. = 1.00

TABLE 17 (CONTINUED)
EXAMPLES OF STS ITEMS NOT SUPPORTED BY OSR DATA

STS	REFERENCE/TASKS	COURSE PROF CODE	TNG EMP*	PERCENT MEMBERS PERFORMING				TASK DIFF**
				3-LEVEL 1ST ENL (N=79)	5-SKILL LEVEL (N=236)	7-SKILL LEVEL (N=166)		
16c(2)(a).	Electrical	-						
O373	Adjust or align electrical relays		2.56	5	8	3	6.10	
O377	Adjust or align relay contacts		2.63	4	8	4	5.67	
O391	Isolate malfunctions within step-by-step switching equipment		2.73	3	8	4	6.17	
O404	Perform PMIs on relays		2.61	4	6	2	4.53	
O407	Perform PMIs on step-by-step switching equipment		2.54	5	7	4	4.61	
17b(2)(a).	Electrical	-						
O373	Adjust or align electrical relays		2.56	5	8	3	6.10	
O377	Adjust or align relay contacts		2.63	4	8	4	5.84	
O404	Perform PMIs on relays		2.61	4	6	2	4.53	
O410	Perform PMIs on X-Y switching equipment		2.59	1	0	1	4.62	
P457	Remove corrosion from metal surfaces		4.32	22	25	16	4.03	

* TE Mean = 2.80 S.D. = 1.53

** TD Mean = 5.00 S.D. = 1.00

TABLE 17 (CONTINUED)

EXAMPLES OF STS ITEMS NOT SUPPORTED BY OSR DATA

STS	<u>REFERENCE/TASKS</u>	COURSE PROF <u>CODE</u>	TNG EMP*	MEMBERS PERFORMING			TASK DIFF**
				3-LEVEL IST ENL (N=79)	5-SKILL LEVEL (N=236)	7-SKILL LEVEL (N=166)	
18c(2).	Align amplifiers	-					
	H175 Adjust or align amplifiers		3.85	4	13	11	5.59
	O395 Perform amplitude response tests		2.07	0	1	1	
20d(3)(a)	Wet splice	-					
	L278 Connect or disconnect fiber optic cables		3.85	6	9	6	4.75
20d(3)(b)	Dry splice	-					
	L278 Connect or disconnect fiber optic cables		3.85	6	9	6	4.75

* TE Mean = 2.80 S.D. = 1.53

** TD Mean = 5.00 S.D. = 1.00

TABLE 18

TECHNICAL TASKS NOT REFERENCED TO STS

<u>TASKS</u>	1ST JOB	1ST ENL	5- LEVEL	7- LEVEL	TNG EMP	TASK DIFF
H192 Isolate malfunctions to non-switched circuits	25	34	28	21	4.85	6.21
H207 Prepare cut sheets	21	34	34	21	4.24	4.48
L291 Measure resistance levels	29	42	33	22	4.37	4.60
P445 Inspect station grounds for corrosion	21	27	23	24	4.63	3.38
G164 Coordinate leased equipment malfunctions with commercial telephone companies	13	18	27	25	2.71	4.24

JOB SATISFACTION ANALYSIS

Review of the job satisfaction data can give career ladder managers a better understanding of some of the factors that may affect job performance of airmen in the career ladder. In addition to background questions and task statements, the survey booklet included questions on job satisfaction. These questions covered job interest, utilization of talents and training, sense of accomplishment from work, and reenlistment intentions. The responses of the survey sample were compared to the previous survey of the career ladder, to job satisfaction data from related specialties surveyed in 1992, and across career ladder jobs identified in the SPECIALTY JOBS section of the OSR.

Table 19 shows the comparison of TAFMS group data of AFSC 362X1 personnel to similar groups from within Mission Equipment Maintenance Specialties surveyed during the previous year. AFSC 362X1 personnel report a consistently higher utilization of talents and job interest. However, across TAFMS groups the perceived utilization of training is slightly lower. The issue of training was also mentioned in a few of the write-in comments where incumbents pointed out that their lack of training on digital switching equipment limited their usefulness. The 1-48 months' TAFMS group also had a higher percent of incumbents planning to reenlist than that of the comparative sample.

An indication of job satisfaction perceptions over time is provided in Table 20. Some consistency exists between the responses over time. The perceived utilization of training among the 1-48 months TAFMS group again shows the current sample having a lower percentage feeling their training is well utilized. Also, a higher percentage of first-enlistment personnel with reenlistment plans exists in the current sample.

Table 21 shows the job satisfaction data for the career ladder jobs. A substantial difference exists between the job interests of the more commonly held jobs and the smaller jobs within the career field.

TABLE 19

**COMPARISON OF TAFMS GROUP JOB SATISFACTION INDICATORS
(PERCENT MEMBERS RESPONDING)**

	<u>1-48 MOS TAFMS</u>		<u>49-96 MOS TAFMS</u>		<u>97+ MOS TAFMS</u>	
	AFSC 362X1 (N=79)	1992 COMP SAMPLE (N=3,272)	AFSC 362X1 (N=133)	1992 COMP SAMPLE (N=2,917)	AFSC 362X1 (N=235)	1992 COMP SAMPLE (N=6,421)
<u>EXPRESSED JOB INTEREST:</u>						
Interesting	84	74	80	72	79	75
So-So	9	16	11	17	12	16
Dull	8	10	8	11	9	9
<u>PERCEIVED UTILIZATION OF TALENTS:</u>						
Fairly Well to Perfectly	80	75	82	71	82	75
Very Little to Not At All	20	20	19	20	17	18
<u>PERCEIVED UTILIZATION OF TRAINING:</u>						
Fairly Well to Perfectly	77	85	71	81	74	79
Very Little to Not At All	23	14	29	19	26	21
<u>SENSE OF ACCOMPLISHMENT FROM WORK:</u>						
Satisfied	73	73	70	71	71	72
Neutral	13	12	18	11	9	10
Dissatisfied	14	14	12	17	19	17
<u>REENLISTMENT INTENTIONS:</u>						
Will/Probably Will Reenlist	72	58	73	70	67	75
Will Not/Probably Will Not Reenlist	27	40	27	30	14	7
Will Retire	1	-	0	-	19	18

- Less than 1 percent

NOTE: Comparative sample is composed of all Mission Equipment Maintenance career ladders surveyed in 1992 (includes AFSCs 305X4, 404X0, 411X0A, 452X5, 454X5, 454X6, 457X0A/B/D/F, 457X2A/D/E, 463X0)

TABLE 20

**COMPARISON OF JOB SATISFACTION DATA
(PERCENT MEMBERS RESPONDING)**

	<u>1-48 MOS TAFMS</u>		<u>49-96 MOS TAFMS</u>		<u>97+ MOS TAFMS</u>	
	1993 (N=79)	1989 (N=204)	1993 (N=133)	1989 (N=211)	1993 (N=235)	1989 (N=213)
<u>EXPRESSED JOB INTEREST:</u>						
Interesting	84	80	80	73	79	80
So-So	9	10	11	17	12	12
Dull	8	9	8	10	9	7
<u>PERCEIVED UTILIZATION OF TALENTS:</u>						
Fairly Well to Perfectly	80	84	81	82	83	81
Very Little to Not At All	20	16	19	18	17	19
<u>PERCEIVED UTILIZATION OF TRAINING:</u>						
Fairly Well to Perfectly	77	85	71	73	74	72
Very Little to Not At All	23	15	29	27	26	28
<u>SENSE OF ACCOMPLISHMENT FROM WORK:</u>						
Satisfied	73	75	70	78	71	70
Neutral	13	11	18	9	9	7
Dissatisfied	14	14	12	12	19	21
<u>REENLISTMENT INTENTIONS:</u>						
Will/Probably Will Reenlist	72	62	73	65	67	76
Will Not/Probably Will Not Reenlist	27	36	27	34	14	8
Will Retire	1	1	0	1	19	15

TABLE 21

**JOB SATISFACTION DATA FOR CLUSTERS AND JOBS
(PERCENT MEMBERS RESPONDING)**

	DIGITAL SWITCHING SYSTEMS MAINT (N=209)	ELECTRO- MECHANICAL SWITCHING SYS MAINT (N=15)	E&I TEAM (N=24)	JOB CONTROL (N=4)
<u>EXPRESSED JOB INTEREST:</u>				
Interesting	88	67	92	25
So-So	8	13	4	50
Dull	4	20	4	25
<u>PERCEIVED UTILIZATION OF TALENTS:</u>				
Fairly Well to Perfectly	88	60	87	75
Very Little To None At All	12	40	13	25
<u>PERCEIVED UTILIZATION OF TRAINING:</u>				
Fairly Well to Perfectly	83	67	66	25
Very Little To Not At All	17	33	46	75
<u>SENSE OF ACCOMPLISHMENT:</u>				
Satisfied	77	73	83	25
Neutral	12	13	8	50
Dissatisfied	11	14	8	25
<u>REENLISTMENT INTENTIONS:</u>				
Will/Probably Will Reenlist	70	87	83	100
Will Not/Probably Will Not Reenlist	23	13	17	0
Will Retire	7	0	0	0

TABLE 21 (CONTINUED)

**JOB SATISFACTION DATA FOR CLUSTERS AND JOBS
(PERCENT MEMBERS RESPONDING)**

	COMMERCIAL LIAISONS (N=12)	QC/ QA (N=13)	RESIDENT TRAINING INST (N=4)	SUPVY/ MGMT (N=80)	FUNCTIONAL MANAGERS (N=18)
<u>EXPRESSED JOB INTEREST:</u>					
Interesting	58	69	100	86	50
So-So	17	15	0	10	33
Dull	25	15	0	4	17
<u>PERCEIVED UTILIZATION OF TALENTS:</u>					
Fairly Well To Perfectly	58	77	100	92	67
Very Little Or Not At All	42	23	0	9	33
<u>PERCEIVED UTILIZATION OF TRAINING:</u>					
Fairly To Perfectly	50	53	100	83	39
Very Little To Not At All	50	45	0	18	61
<u>SENSE OF ACCOMPLISHMENT:</u>					
Satisfied	58	62	75	79	44
Neutral	17	8	0	8	17
Dissatisfied	25	31	25	14	39
<u>REENLISTMENT INTENTIONS:</u>					
Will/Probably Will Reenlist	67	62	50	71	39
Will Not/Probably Will Not Reenlist	33	38	50	6	22
Will Retire	0	0	0	23	39

IMPLICATIONS

This survey was conducted primarily to review the career ladder structure based on the inclusion of digital switching in the basic AFSC 362X1 course. Changes in the career ladder job structure have occurred due to the massive changeover from electromechanical to digital switching systems. Data collected in this survey indicate the AFR 39-1 Specialty Descriptions accurately portray the jobs in this career ladder.

Analysis of the STS points out that the scheduled revisions are warranted. Substantial sections associated with older technologies should be considered for deletion.

Job satisfaction ratings for this specialty are varied. At least in part, these variations exist due to the changes in technology from electromechanical to digital switching systems. On the whole, respondents report higher job satisfactions than comparable groups in related specialties, and their satisfaction appears to be stable compared to their responses 4 years ago.

APPENDIX A

TABLE I

**DIGITAL SWITCHING SYSTEMS MAINTENANCE CLUSTER
ST57**

GROUP SIZE: 209

PERCENT OF SAMPLE: 47%

PREDOMINANT PAYGRADE: E-4

AVERAGE TAFMS: 92 MONTHS

AVERAGE TICF: 80 MONTHS

PERCENT IN 1ST ENL: 55%

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
P460 Remove or replace jumpers	88
I235 Isolate malfunctions to dial lines	88
P465 Wrap or unwrap terminals	87
I245 Isolate malfunctions to single-line telephones	85
I236 Isolate malfunctions to direct lines	84
H210 Remove or replace circuit cards or electrical card assemblies	80
H211 Remove or replace fuses	79
I248 Trace calls using visual display units (VDUs)	77
A6 Coordinate jobs, outages, or maintenance with job control	77
P451 Isolate malfunctions to jumpers	77
M307 Isolate malfunctions to attendant consoles	77
J260 Take software images or database backups	76
H201 Perform PMIs on air filters	75
G167 Coordinate troubleshooting with outside agencies	74
L276 Access lines and trunks from maintenance positions (MAPs)	74
H195 Measure voltage levels	74
I237 Isolate malfunctions to duress or intrusion alarm circuits	74
P439 Inspect batteries for corrosion	73
G170 Program features	73
G165 Coordinate telephone installation activities with inside or outside plants	68
H199 Perform busy-out procedures	68
I241 Isolate malfunctions to inside wiring	67
M310 Isolate malfunctions to magnetic tape drive units	66
E143 Update telephone system cable records	66
I243 Isolate malfunctions to multiline telephones	66
I239 Isolate malfunctions to fire alarm circuits	66
H194 Measure capacitance levels	65
I234 Isolate malfunctions to data circuits	65

TABLE II

**ELECTROMECHANICAL SWITCHING SYSTEMS MAINTENANCE JOB
ST70**

GROUP SIZE: 15

PERCENT OF SAMPLE: 4%

PREDOMINANT PAYGRADE: E-4

AVERAGE TAFMS: 96 MONTHS

AVERAGE TICF: 64 MONTHS

PERCENT IN 1ST ENL: 47%

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
P465 Wrap or unwrap terminals	100
O379 Adjust or align switch contacts	100
P463 Solder or desolder terminals	93
P460 Remove or replace jumpers	93
O393 Operate central office test desks	93
O377 Adjust or align relay contacts	93
O374 Adjust or align electrical switches	93
O403 Perform PMIs on mechanical switches	93
O380 Adjust or align wiper contacts	93
O384 Assemble or disassemble mechanical switches	93
O385 Isolate malfunctions to central office switchboards	93
O407 Perform PMIs on step-by-step switching equipment	86
O375 Adjust or align mechanical relays	86
O433 Trace calls using trunking schematics or bay cards	86
O391 Isolate malfunctions within step-by-step switching equipment	86
O376 Adjust or align mechanical switches	86
O390 Isolate malfunctions within linefinder equipment	86
O381 Adjust or align wipers	86
O373 Adjust or align electrical relays	86
P439 Inspect batteries for corrosion	86
O400 Perform PMIs on central office switchboards	86
P442 Inspect frames for corrosion	86
O405 Perform PMIs on ringer units	80
O401 Perform PMIs on central office test desks	80
O420 Remove or replace mechanical relays	80
P438 Cross-connect intermediate or mainframes	80
O404 Perform PMIs on relays	73
O398 Perform PMIs on attendant cabinets	73
P440 Inspect bus bars for corrosion	73
O431 Remove or replace wipers	73

TABLE III

**ENGINEERING AND INSTALLATION (E & I) TEAM JOB
ST72**

GROUP SIZE: 24

PERCENT OF SAMPLE: 5%

PREDOMINANT PAYGRADE: E-4

AVERAGE TAFMS: 110 MONTHS

AVERAGE TICF: 98 MONTHS

PERCENT IN 1ST ENL: 30%

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
N337 Mark, cut, strip, and butt cables	100
N329 Form cables	100
N328 Fan cables	100
N343 Perform initial installations of cable runs	95
N368 Run cables	83
N353 Perform initial installations of jumpers	83
N338 Perform cable operational tests	83
P464 Terminate cables with punch-on devices	83
N344 Perform initial installations of cable troughs or conduits	79
N327 Drill holes for mountings or cable runs	79
P465 Wrap or unwrap terminals	79
N362 Perform initial installations of wire wrap or amphenol connecting blocks	75
N332 Interpret floor plans	75
N342 Perform initial installations of cable in underfloor conduit systems	70
N331 Interpret blueprints	66
P463 Solder or desolder terminals	63
N347 Perform initial installations of digital modems	63
N366 Remove or replace cable racks	58
N330 Ground power supplies	58
N321 Attach identification tags to cable ends	58
E118 Check out or return tools or equipment	58
N351 Perform initial installations of inside wiring	58
P462 Remove or replace twisted pair cables	58
N336 Locate or mark positioning of equipment on plans or specifications	54
P457 Remove corrosion from metal surfaces	50
P460 Remove or replace jumpers	50
E126 Maintain tool kits	46
N333 Isolate factory wiring faults	46
P434 Apply corrosion preventative materials to equipment or supplies	46
P451 Isolate malfunctions to jumpers	46

TABLE IV

**JOB CONTROL JOB
ST67**

GROUP SIZE: 4
PERCENT OF SAMPLE: >1%
PREDOMINANT PAYGRADE: E-4

AVERAGE TAFMS: 57 MONTHS
AVERAGE TICE: 51 MONTHS
PERCENT IN 1ST ENL: 100%

<u>TASKS</u>		<u>PERCENT MEMBERS PERFORMING</u>
G162	Assign job control numbers	100
G167	Coordinate troubleshooting with outside agencies	100
A23	Prepare briefings	75
A6	Coordinate jobs, outages, or maintenance with job control	50
E116	Annotate workorders	50
A13	Determine work priorities	50
B32	Direct maintenance of equipment or supplies	50
G164	Coordinate leased equipment malfunctions with commercial telephone companies	50
G173	Review telephone workorder logs	50
A27	Update preventive maintenance instructions (PMIs)	50
D100	Train personnel on core automated maintenance system (CAMS)	50
A3	Conduct meetings, such as staff, council, board	25
A26	Update preventative maintenance instructions	25
A9	Determine equipment or supply requirements	25
E141	Update publication files	25
G163	Coordinate circuit or trunk outages with commercial telephone companies	25
D81	Conduct OJT	25
B36	Implement emergency or disaster preparedness plans	25
E129	Process work orders	25
E118	Check out or return tools or equipment	25

TABLE V
COMMERCIAL LIAISONS JOB
ST26

GROUP SIZE: 12
PERCENT OF SAMPLE: 3%
PREDOMINANT PAYGRADE: E-5

AVERAGE TAFMS: 134 MONTHS
AVERAGE TICF: 130 MONTHS
PERCENT IN 1ST ENL: 0%

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
G166 Coordinate telephone installations with base units or commercial telephone companies	83
G164 Coordinate leased equipment malfunctions with commercial telephone companies	75
G169 Log requirements for telephone installations	75
G163 Coordinate circuit or trunk outages with commercial telephone companies	75
G167 Coordinate troubleshooting with outside agencies	75
G173 Review telephone work order logs	58
G165 Coordinate telephone installation activities with inside or outside plants	50
E129 Process workorders	50
G162 Assign job control numbers	50
E116 Annotate workorders	42
B29 Assign due dates	42
B30 Direct installation of telephone equipment	42
F150 Assign line assignments	42
A11 Determine telephone installation requirements	42
G168 Interpret communication service reports	33
E143 Update telephone system cable records	33
G170 Program features	33
A12 Determine telephone maintenance requirements	33
B39 Implement safety training programs	33
F147 Analyze equipment outages or malfunction reports	33
C77 Write EPRs	25
A5 Coordinate installation of equipment with contract personnel or associated system personnel	25
A6 Coordinate jobs, outages, or maintenance with job control	25
C65 Perform self-inspections	25
A9 Determine equipment or supply requirements	25

TABLE VI
QUALITY CONTROL/QUALITY ASSURANCE CLUSTER
GP42

GROUP SIZE: 13
PERCENT OF SAMPLE: 3%
PREDOMINANT PAYGRADE: E-7

AVERAGE TAFMS: 143 MONTHS
AVERAGE TICF: 123 MONTHS
PERCENT IN 1ST ENL: 8%

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
B48 Write staff studies or special reports	54
C50 Counsel personnel on personal or military related matters	46
A22 Plan work assignments	46
D81 Conduct OJT	46
A18 Establish work controls	38
D95 Perform test analyses	38
D98 Schedule personnel for training	38
A13 Determine work priorities	38
D91 Evaluate individual training needs	38
A23 Prepare briefings	38
C68 Review correspondence	38
E129 Process workorders	31
B32 Direct maintenance of equipment or supplies	31
B41 Interpret policies, directives, or procedures for personnel	31
A9 Determine equipment or supply requirements	31
D94 Evaluate training methods or techniques	31
D90 Develop training programs	31
D78 Administer tests	31
A6 Coordinate jobs, outages, or maintenance with job control	31
A10 Determine personnel requirements	31
C56 Evaluate suggestions	31
A12 Determine telephone maintenance requirements	31
A3 Conduct meetings, such as staff, council, board	31
B36 Implement emergency or disaster preparedness plans	31
D79 Annotate on-the-job training records	31
C55 Evaluate personnel for compliance with safety standards	31

TABLE VII

**RESIDENT TRAINING INSTRUCTORS JOB
ST175**

GROUP SIZE: 4
PERCENT OF SAMPLE: >1%
PREDOMINANT PAYGRADE: E-5

AVERAGE TAFMS: 111 MONTHS
AVERAGE TICE: 109 MONTHS
PERCENT IN 1ST ENL: 0%

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
D82 Conduct resident course classroom training	100
D83 Conduct skill performance tests	100
D99 Score tests	100
D96 Prepare lesson plans	100
D78 Administer tests	75
D85 Construct training aids	75
D97 Procure training aids, space, or equipment	50
D95 Perform test analyses	50
D104 Write test questions	50
D93 Evaluate progress of resident course students	50
D86 Counsel trainers or trainees on training progress	50
C50 Counsel personnel on personal or military-related matters	50
C55 Evaluate personnel for compliance with safety standards	25
C54 Evaluate personnel for compliance with performance standards	25
E125 Inventory equipment or supplies	25
E132 Review daily document registers	25
E107 Annotate custody authorization/custody receipt listings (CA/CRLs)	25
C70 Review master identification listings	25
E131 Review CA/CRLs	25
E142 Update technical order (TO) files or TO compliance records	25
C65 Perform self-inspections	25
E138 Unpack or verify received materials	25

TABLE VIII

**SUPERVISORY/MANAGEMENT CLUSTER
ST51**

GROUP SIZE: 80

PERCENT OF SAMPLE: 18%

PREDOMINANT PAYGRADE: E-6

AVERAGE TAFMS: 172 MONTHS

AVERAGE TICF: 152 MONTHS

PERCENT IN 1ST ENL: 1%

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
C77 Write EPRs	93
C50 Counsel personnel on personal or military-related matters	90
A13 Determine work priorities	88
A20 Plan details or additional duties	86
A22 Plan work assignments	82
D91 Evaluate individual training needs	82
B41 Interpret policies, directives, or procedures for personnel	81
C54 Evaluate personnel for compliance with performance standards	80
D87 Determine training requirements	77
A25 Schedule leaves or temporary duty (TDY) assignments	77
C68 Review correspondence	76
D79 Annotate on-the-job training (OJT) records	76
A18 Establish work controls	75
A9 Determine equipment or supply requirements	75
D92 Evaluate progress of OJT trainers or trainees	73
A19 Establish work methods	73
C51 Evaluate individuals for promotion, demotion, or reclassification	71
A17 Establish performance standards for personnel	71
A6 Coordinate jobs, outages, or maintenance with job control	71
B46 Supervise Telephone Switching Specialists (AFSC 36251)	70
C52 Evaluate inspection report findings or procedures	70
B29 Assign due dates	70
C55 Evaluate personnel for compliance with safety standards	70
D81 Conduct OJT	68
A10 Determine personnel requirements	66
A8 Coordinate quality control (QC) or quality assurance (QA) inspections with inspectors	66
A1 Assign personnel to duty positions	66

TABLE IX

FUNCTIONAL MANAGERS CLUSTER
ST31

GROUP SIZE: 18

PERCENT OF SAMPLE: 4%

PREDOMINANT PAY GRADE: E-7

AVERAGE TAFMS: 207 MONTHS

AVERAGE TICF: 193 MONTHS

PERCENT IN 1ST ENL: 0%

<u>TASKS</u>	<u>PERCENT MEMBERS PERFORMING</u>
C68 Review correspondence	83
A3 Conduct meetings, such as staff, council, board	61
A14 Develop tables, graphs, or diagrams other than organizational charts or status boards	56
A23 Prepare briefings	56
B48 Write staff studies or special reports	56
B29 Assign due dates	50
E139 Update administrative files	44
C66 Perform technical advisory functions	44
A4 Coordinate equipment modifications with contract personnel	44
A16 Establish organizational policies, operating instructions (OIs), or standard operating procedures for personnel	39
B41 Interpret policies, directives, or procedures for personnel	33
A9 Determine equipment or supply requirements	33
A13 Determine work priorities	33
A5 Coordinate installation of equipment with contract personnel or associated system personnel	33
E107 Annotate custody authorization/custody receipt listings	33
C56 Evaluate suggestions	33
A11 Determine telephone installation requirements	28
E131 Review CA/CRLs	28
F147 Analyze equipment outages or malfunction reports	28
A26 Update organizational charts or status boards	22
D98 Schedule personnel for training	17
D87 Determine training requirements	17
C69 Review event lists	17
B31 Direct maintenance of administrative files	17
B30 Direct installation of telephone equipment	17
E132 Review daily document registers	17
E133 Review daily supply records	17